July 23, 1999

MEMORANDUM

TO: Orville D. Green, Administrator
Air Quality Permit Program

FROM: Susan J. Richards
Program Manager
Air Quality Permit Program

SUBJECT: Issuance of Revision to Tier II Operating Permit (#029-00008) to Soda Springs Phosphate, Incorporated; Soda Springs, Idaho

PROJECT DESCRIPTION

This project is for the issuance of a Tier II Operating Permit (OP) revision for Soda Springs Phosphate, Inc., (SSP) located at Soda Springs, Idaho, in order to incorporate updated emission factors. In addition to the scrubber stack, the emissions sources of the facility are the screens, hammer mill, conveyers, transfer points, and ore and product handling. Fugitive emissions from unpaved roads are considered part of the stockpiles emissions because the facility is very close to the County road.

DISCUSSION

On December 16, 1998, DEQ received an application from SSP for modification of their existing Tier II OP (#029-00008; 4/12/96). On January 13, 1999, the application was declared complete. A public comment period as held from April 22, 1999 to May 21, 1999. No comment was received.

FEES

Fees apply to this facility in accordance with IDAPA 16.01.01.470. The facility has paid their application fees for this revised Tier II OP.

RECOMMENDATIONS

Based on the review of its existing Tier II OP, information provided by the company, and all applicable state and federal rules and regulations concerning the revision of a Tier II OP, the Bureau recommends that Soda Springs Phosphate, Inc., be issued a revised Tier II Operating Permit.

ODG\SJR\TRL:jrj G:\AHW\AQPB\OP\TIER.2\SODASPRI\SSP-M.2IM

Attachments
cc: M. Lowe, Pocatello Regional Office
Source File (#029-00008)
COF

July 23, 1999

MEMORANDUM

TO: Susan J. Richards
Program Manager
Air Quality Permit Program

FROM: Thomas R. Lundahl, Air Quality Engineer
State Technical Services Office

THROUGH: Daniel P. Salgado
Lead, Process Engineering
State Technical Services Office

SUBJECT: Technical Analysis for Revision to Tier II Operating Permit (#029-00008)
Soda Springs Phosphate, Incorporated (Soda Springs)

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 16.01.01 Sections 404.04 (Rules for the Control of Air Pollution in Idaho) (Rules) for revision of Tier II Operating Permits.

PROJECT DESCRIPTION

This project is for the issuance of a Tier II Operating Permit (OP) revision for Soda Springs Phosphate, Inc., (SSP) located at Soda Springs, Idaho, in order to incorporate a recent source test. In addition to the scrubber stack, the emissions sources of the facility are the screens, hammer mill, conveyers, transfer points, and ore and product handling. Fugitive emissions from unpaved roads are considered part of the stockpiles emissions because the facility is very close to the county road.

FACILITY DESCRIPTION

SSP is a phosphate granulation facility, which granulates raw material (powdered phosphate ore or gypsum) by mixing it with lignosulfonate molasses. Raw material is delivered to the facility by dump trucks. Raw material is transferred from stockpiles by a front-end loader to the feed shaker screen that leads to the feeder belt, the feeder bin, the pan feeder, the feed belt, and then to the pug mill. Lignosulfonate powder is delivered by cars where it is pumped to a storage tank. Lignosulfonate is mixed with water in the mix tank to form a binder which is pumped to the pug mill where it is milled with the raw material. The product then leaves to a granulator, a dryer, dryer belt, then to the cooler. Emissions from the dryer and the cooler are controlled by two (2) dry cyclones and a wet cyclone connected in series with three wet scrubbers. After that the product is transferred to the cooler discharge belt, the cooler extension belt, and then to a set of three screens, the Rotex screen, the hummer screen and the mini product screen. Oversize product is transferred to the oversize belt which leads to the hammer mill. Products from the screens are transferred to the product storage via the product belt and the mini product belt. The fines are recycled to the feed belt through the fines return belt. Loading of the product is made by a front-end loader that transfers the product to the loadout shaker, the loadout belt, then to trucks or cars. Products from the hammer mill pass through a multiclone that leads to the cooler.

This project is for a modified OP for the following existing point and fugitive emissions sources:

Point Sources:

(1) Scrubber Stack: Emissions from the scrubber stack are controlled by the following:

Name	*Manufacturer*	*Size*	*Speed*	*Capacity*
Cyclones (2) {dry}				
Cyclone {wet}				
Scrubber Pump #1	Barkley	4" x 3"	3600 rpm	360 GPM
Scrubber Pump #2	Gallagher	Sump x 3"	1500 rpm	200 GPM
Scrubber Pump #3	Gallagher	Sump x 3"	1500 rpm	200 GPM
Multiclone			1200 rpm	10000 CFM
High Pressure Pump	Hypro	Diaphragm	350 rpm	17 GPM

The stack parameters are the following:

UTM-X Coordinate (KM)	452.3
UTM-Y Coordinate (KM)	4724.8
Stack Exit Height (ft)	60
Stack Exit Diameter (ft)	8
Stack Exit Flow Rate (ACFM)	19,300
Stack Exit Temperature (°F)	95°

(2) Screens

Name	*Manufacturer*	*Size*	*Speed*	*Capacity*
Feed Shaker	Cedar Rapids	4' x 10'	900 rpm	12 tph
Rotex	S/A, #80	5' x 7'	227 rpm	12 tph
Hummer		4' x 10'	950 rpm	8 tph
Mini Product		2.5' x 3.5'	1200 rpm	3 tph
Load Out	Tyler-3-Deck	5' x 10'	960 rpm	30 tph

Fugitive Sources:

(1) Ore unloading, piling, stockpiles, and feeding
(2) Product loading

A more detailed process and equipment description can be found in the operating permit application materials and in the facility's source file.

SUMMARY OF EVENTS

On December 16, 1998, DEQ received an application from SSP for modification of their existing Tier II OP (#029-00008; 4/12/96). On January 13, 1999, the application was declared complete. A public comment period was held from April 22, 1999 to May 21, 1999. No comments were received.

DISCUSSION

1. Emission Estimates

Emission estimates were provided by SSP. The calculations were resubmitted by the applicant according to DEQ request. DEQ also estimated the emissions from all the sources of the facility (Appendix A). Calculations were based on the maximum production rate of the dryer, 12.2 tons per hour.

Emissions from the dryer, pugmill, granulator, and cooler were based on a recent source test. Screens, transfer points, milling, and ore and product handling were estimated by using either the corresponding emissions factors or the predictive equation furnished by the 5th edition of AP-42. Emissions from stockpiles were estimated using emissions factors from the 4th edition of AP-42 (not available in the 5th edition). A control efficiency of fifty percent (50%) was assumed for the use of water or dust suppressants.

2. Modeling

Modeling for impact analysis for the various emissions from the facility's point sources was performed. At the facility's new permitted emission rates, modeling showed no violation of the National Ambient Air Quality Standards (NAAQS). A complete modeling analysis can be found in Appendix B.

3. Area Classification

SSP - Soda Springs, Caribou County, Idaho, is located in AQCR 61. The area is classified as attainment or unclassifiable for all criteria air pollutants.

4. Testing

During the most recent source test, SSP did not continuously monitor the parameters of the scrubbers and dryer during the performance test. SSP also did not test at their normal operating parameters. The log book shows that they usually run the dryer at around 110° - 150°F, but the highest they tested was at 104°F. At a higher temperature, more moisture is driven from the granulated product and it releases more particulates.

SSP does not actually measure pressure drop across the throat of the scrubbers. SSP measures the pressure at the dryer fan exhaust and cooler fan exhaust, and then again at the bottom of the stack. Their log book shows that they rarely maintain the same pressure drop they recorded during the test.

SSP does not actually measure gallons per minute (gpm) through the scrubber. Instead they measure pounds per square inch (psi) for the pumps. SSP uses some conversion factor for water to determine how much water is going through the scrubbers. That might be okay if they were using water as the scrubbing media, but they use a combination of mostly lignosulfonate and a small amount of water (the same stuff they spray on the phosphate to granulate it). This mixture is very syrupy and its consistency changes with the temperature outside.

The other problem with the recent source test is that SSP did not maintain any of their measured parameters at a consistent rate throughout the test. We have no idea if the scrubber was working at its best on run number three because of the pressure drop they maintained, or the gpm for the scrubber media, or if the scrubbers weren't working at all, and the process simply releases less particulate because the dryer temperature was low.

For these reasons, SSP is being required to perform a new source test within ninety days of permit issuance.

5. Visible Emission Evaluations

As the requirement for the use of the high-pressure pump when visible emissions are greater than ten percent (10%) was taken out of the permit, monthly visible emission evaluations were added. The high-pressure pump requirement was taken out due to operational difficulties.

6. Facility Classification

SSP - Soda Springs, Idaho, is not a designated facility as defined in IDAPA 16.01.01.006.25. The facility is classified as an A2 source because the actual emissions of any criteria pollutant is less than 100 tons per year.

7. Regulatory Review

This operating permit is subject to the following permitting requirements:

a.	IDAPA 16.01.01.401	Tier II Operating Permit
b.	IDAPA 16.01.01.403	Permit Requirements for Tier II Sources
c.	IDAPA 16.01.01.404.01(c)	Opportunity for Public Comment
d.	IDAPA 16.01.01.404.04	Authority to Revise or Renew Operating Permits
e.	IDAPA 16.01.01.406	Obligation to Comply
f.	IDAPA 16.01.01.470	Permit Application Fees for Tier II Permits
g.	IDAPA 16.01.01.625	Visible Emission Limitation
h.	IDAPA 16.01.01.650	General Rules for the Control of Fugitive Dust
i.	IDAPA 16.01.01.700	Particulate Matter – Process Weight Limitations
j.	IDAPA 16.01.01.775	Rules for Control of Odor

FEES

Fees apply to this facility in accordance with IDAPA 16.01.01.470. The facility is subject to permit application fees for modified Tier II permits of five hundred dollars ($500.00).

RECOMMENDATIONS

Based on the review of its existing Tier II OP, information provided by the company, and all applicable state and federal rules and regulations concerning the revision of a Tier II OP, staff recommends that Soda Springs Phosphate, Inc. be issued a proposed Tier II Operating Permit. An opportunity for public comment on the air quality aspects of the proposed permit shall be provided as required by IDAPA 16.01.01.404.01. The facility has been notified in writing of the required Tier II application fee of five hundred dollars ($500.00). The permit will be issued upon receipt of the fee.

SJR\DPS\TRL:ls G:\AHW\AQPB\OP\TIER.2\SODASPR\SSP-M.2TA

Attachments

cc: M. Lowe, Pocatello Regional Office
Source File (#029-00008)
COF

APPENDIX A

(Emission Estimates)

Soda Springs Phosphate, Inc.
P.O. Box 578
Soda Springs, ID 83276

Contact Person: Lynn Moore
OP #: 029-00008

Tier II application information

Production Data

Max. Hourly Rate (tph)	12.2
Act. Hourly Rate (tph)	5
Oversize product (tph)	4

Dryer Data

Max. Combustion Rate (ft3/hr)	6000
Annual Combustion Rate (ft3/yr)	5.3E+07
N. G. Heat Content (Btu/ft3)	1050

Source	Pollutant	E. F.	Unit	Reference	Control Equipment	Eff. %	E. Rate lb/hr	Op. Time hr/yr	E. Rate tons/yr
PugMill, Granulator, Dryer, Cooler	PM	0.313	lb/ton	Source Test	Wet Scrubbers	inc.	3.819	8760	16.725
	PM-10	0.313	lb/ton	Source Test	Wet Scrubbers	inc.	3.819	8760	16.725
	Fluorides	8	lb/ton	T 8.5.2-1, 5th	Wet Scrubbers	97	2.928	8760	12.825
Screen (Rotex)	PM	0.0394	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.480	8760	2.104
	PM-10	0.015	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.183	8760	0.802
Fine Screens (Hummer, Mini)	PM	0.1864	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	1.528	8760	6.694
	PM-10	0.071	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.582	8760	2.550
Conveyor Transfer (10 Pts. to SC)	PM	0.0037	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.224	8760	0.982
	PM-10	0.0014	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.085	8760	0.374
Conveyor Transfer (8 Pts.from SC)	PM	0.0037	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.090	8760	0.393
(assume half load)	PM-10	0.0014	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.034	8760	0.150
Conveyor Transfer (loadout)	PM	0.0037	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.055	8760	0.241
at 30 tph rate	PM-10	0.0014	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.021	8760	0.092
Hammer Mill (fines crushing)	PM	0.0394	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.059	8760	0.259
	PM-10	0.015	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.023	8760	0.099
E=k(0.0023)(U/5)^1.3/(M/2)^1.4	*U=*	*7.8 mph*		*Mo=*	*4.8 %*		*Mp=*	*0.5 %*	
Ore Piling	PM	0.0012	lb/ton	T 11.19.2-2, 5th	Moisture Content	0	0.015	8760	0.064
	PM-10	0.0004	lb/ton	T 11.19.2-2, 5th	Moisture Content	0	0.005	8760	0.023
Ore Feeding	PM	0.0012	lb/ton	T 11.19.2-2, 5th	Moisture Content	0	0.015	8760	0.064
	PM-10	0.0004	lb/ton	T 11.19.2-2, 5th	Moisture Content	0	0.005	8760	0.023
Feed Shaker Screen	PM	0.0394	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.240	8760	1.052
	PM-10	0.015	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.092	8760	0.401
Product Loading	PM	0.0286	lb/ton	T 11.19.2-2, 5th	Moisture Content	0	0.348	8760	1.526
	PM-10	0.01	lb/ton	T 11.19.2-2, 5th	Moisture Content	0	0.122	8760	0.534
Product Loadout Shaker Screen	PM	0.0394	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.240	8760	1.052
	PM-10	0.015	lb/ton	T 11.19.2-2, 5th	Dust Suppressant	50	0.092	8760	0.401

Source	Pollutant	E. F.	Unit	Reference	Control Equipment	Eff. %	E. Rate lb/hr	Op. Time hr/yr	E. Rate tons/yr
Dryer's Combustion Emissions	PM	12	lb/Mcf	T 1.4-1, 5th	none	97	0.002	8760	0.009
	PM-10	12	lb/Mcf	T 1.4-1, 5th	none	97	0.002	8760	0.009
	SO2	0.6	lb/Mcf	T 1.4-2, 5th	none	0	0.004	8760	0.016
	NOx	100	lb/Mcf	T 1.4-2, 5th	none	0	0.600	8760	2.628
	CO	21	lb/Mcf	T 1.4-2, 5th	none	0	0.126	8760	0.552
	VOC	5.28	lb/Mcf	T 1.4-3, 5th	none	0	0.032	8760	0.139

Source	Pollutant	E. F.	Unit	Reference	Control Equipment	Eff. %	Pile Area Acre	Op. Time days	E. Rate tons/yr
Active Stockpiles	PM	13.2	lb/ac/dy	T 8.19.1-1, 4th	Dust Suppressant	50	0.574	280	0.530
	PM-10	6.3	lb/ac/dy	T 8.19.1-1, 4th	Dust Suppressant	50	0.574	280	0.253
Inactive Stockpiles	PM	3.5	lb/ac/dy	T 8.19.1-1, 4th	Dust Suppressant	50	0.574	85	0.043
	PM-10	1.7	lb/ac/dy	T 8.19.1-1, 4th	Dust Suppressant	50	0.574	85	0.021

Emissions from Scrubber Stack	*lb/hr*	*tons/yr*
PM	*3.821*	*16.735*
PM-10	*3.821*	*16.735*
SO2	*0.004*	*0.016*
NOx	*0.600*	*2.628*
CO	*0.126*	*0.552*
VOC	*0.032*	*0.139*

Emissions from Screening, Conveying, and Milling	*lb/hr*	*tons/yr*
PM	*2.437*	*10.673*
PM-10	*0.928*	*4.066*

Emissions from Ore Unloading, Piling, Stockpiles, and Feeding	*lb/hr*	*tons/yr*
PM	*1.418*	*1.754*
PM-10	*1.250*	*0.720*

Emissions from Product Loading	*lb/hr*	*tons/yr*
PM	*0.589*	*2.578*
PM-10	*0.213*	*0.935*

APPENDIX B

(Modeling Results)

March 1, 1999

MEMORANDUM

TO: Matt Stoll, Manager, Sciences Section, Technical Services Bureau (TSB), A&HW

FROM: Jay Witt, Air Quality E.I.T., TSB, A&HW JW

SUBJECT: Modeling Assessment for Soda Springs Phosphate

---

1. SUMMARY

Soda Springs Phosphate, located in Soda Springs, Idaho, submitted a request to have their permitted PM_{10} emissions limit raised. An ISCST3 dispersion modeling analysis was conducted using the information supplied by the facility. The analysis produced no estimated exceedences of the PM_{10} National Ambient Air Quality Standards (NAAQS). Based on the dispersion modeling analysis, staff conclude that the requested increase in rate of emissions should not result in a violation of the PM_{10} NAAQS.

2. DISCUSSION

2.1 Project Description

Soda Springs Phosphate in Soda Springs, Idaho is requesting that the PM_{10} emissions limit in their Tier II Operating Permit be raised from 1.272 lb/hr to 5 lb/hr. They feel that raising the limit to 5 lb/hr would more justly reflect the capability of their equipment. Their request is based on the following:

- The emissions factor used to establish the permit limit was obtained from data representative of Florida phosphate ore, which is not representative of Idaho's ore. As a result, stack testing measurements at the facility (of 3.82 lb/hr) exceeded the permit limit.
- The plant operates on an intermittent basis with a maximum operating time of 5,000 hours per year.

2.2 Applicable Air Quality Impact Limits

The area, which Soda Springs Phosphate is located, is considered to be unclassified for all criteria pollutants. The potential impact of PM_{10} released by the facility can not exceed the National Ambient Air Quality Standards (NAAQS) listed in Table 2.2.1.

An analysis of both the annual and 24-hour PM_{10} NAAQS were conducted. For the 24-hour PM_{10} NAAQS analysis, the fourth high value was used in accordance with EPA dispersion modeling guidance. The dispersion modeling analysis of submitted information did not estimate an exceedance of either of the PM_{10} NAAQS.

3. MODELING RESULTS

Pollutant	Overall Estimated Concentrations[a] ($\mu g/m^3$)	Averaging Period	Standard/ NAAQS ($\mu g/m^3$)	Impact on Limit[b] (%)
PM_{10} (Statewide Background)	37	Annual	50	8
	113	24-Hour	150	18
PM_{10} (Soda Springs)	28	Annual	50	8
	99	24-Hour	150	18

[a]Estimated concentrations for criteria pollutants include background concentrations when applicable.
[b]The calculated impact on the applicable limit does NOT include background concentrations.

Estimated PM_{10} impacts resulting from the proposed emissions increase at Soda Springs Phosphate do not exceed the PM_{10} NAAQS. Staff's modeling analysis is based on conservative assumptions, and information submitted to DEQ.

Electronic copies of the modeling analysis are saved on disk.

JW:sjt g:\ahw\sthomas\data\wp61\witt\tlssp.wpd

cc: Tom Lundahl
COF